

In the Claims

A complete listing of the claims follows, for entry in the case.

1-11. (canceled)

12. (currently amended) In an apparatus for removal of process related materials from at least one substrate, a method comprising:

defining a processing chamber;  
providing means for exhausting gases from the processing chamber;  
arranging a structure in said processing chamber for supporting said substrate;  
locating a source one or more sources of reactive gas phase radicals outside of said processing chamber;  
conveying said reactive gas phase radicals from said source one or more sources to said processing chamber for communication with said substrate therein; and  
exposing at least one surface of said substrate and said reactive gas phase radicals to an ultraviolet radiation such that said ultraviolet radiation activates reactions between the gas phase radicals and the process related materials for use in removal of the process related materials.

13. (original) The method of Claim 12 wherein the process related materials include residues remaining on the substrate following an at least partial removal of a photoresist layer from the substrate and exposing includes removing the residues.

14. (original) The method of claim 12 including the step of producing said ultraviolet radiation with a wavelength greater than approximately 250 nanometers.

15. (original) The method of claim 12 including using an additional source of ultraviolet radiation for producing an additional ultraviolet radiation which generates said reactive gas phase radicals by photodissociation without directly exposing the substrate to the additional ultraviolet radiation.

16. (original) The method of claim 15 wherein said additional source produces said additional ultraviolet radiation with an additional wavelength that is less than a wavelength of the ultraviolet radiation to which the substrate is directly exposed.

17. (original) The method of claim 16 wherein the additional wavelength is greater than or equal to approximately 172 nanometers.

18. (original) The method of claim 12 including using, in said source of reactive gas phase radicals, a plasma to generate the reactive gas phase radicals without exposing the substrate to the plasma.

19. (original) In an apparatus for removal of process related materials from at least one substrate, a method comprising:

defining a processing chamber;

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providing means for exhausting gases from the processing chamber;  
arranging a structure in said processing chamber for supporting said substrate;  
locating a first source of at least a first species of reactive gas phase radicals outside of said processing chamber;  
locating a second source, outside of said processing chamber, for providing at least one of a selected gas and a second species of reactive gas phase radicals; and  
conveying said first species of reactive gas phase radicals from said first source and provided ones of the selected gas and the second species of reactive gas phase radicals from said second source to said processing chamber for reaction therein for use in removing said process related materials.

20. (original) The method of Claim 19 including producing at least one of the first reactive species and the second reactive species using an ultraviolet radiation with a wavelength greater than or equal to approximately 172 nanometers.

21-23. (canceled)

24. (original) In an apparatus for removal of process related materials from a substrate, a method comprising:  
defining a processing chamber;  
providing means for exhausting gases from the processing chamber;  
arranging a structure in said processing chamber for supporting said substrate;  
locating a source of reactive gas phase radicals outside of said processing chamber;  
conveying said reactive gas phase radicals from said source to said processing chamber for communication with said substrate therein; and  
exposing said reactive gas phase radicals to an ultraviolet radiation prior to reaching said substrate such that said ultraviolet radiation energizes the reactive gas phase radicals to thereafter activate reactions between the gas phase radicals and the process related materials for use in removal of the process related materials without directly exposing the substrate to the ultraviolet radiation.

25. (original) The method of Claim 24 wherein the process related materials include residues remaining on the substrate following an at least partial removal of a photoresist layer from the substrate and exposing includes removing the residues.

26. (original) The method of claim 25 wherein said ultraviolet radiation includes a wavelength of greater than or equal to approximately 172 nm.

27-29. (canceled)

30. (new) In an apparatus for removal of process related materials from a substrate, a method comprising:  
defining a processing chamber;  
providing an arrangement that exhausts gases from the processing chamber;  
arranging a structure in said processing chamber for supporting said substrate;  
locating a source arrangement outside of said processing chamber for producing reactive gas phase radicals;  
conveying said reactive gas phase radicals from said source arrangement to said processing chamber for

communication with said substrate therein; and

exposing said reactive gas phase radicals to an ultraviolet radiation at least prior to reaching said substrate such that said ultraviolet radiation energizes the reactive gas phase radicals to thereafter activate reactions between the gas phase radicals and the process related materials for use in removal of the process related materials.

31. (new) The method of claim 30 including isolating the substrate from the ultraviolet radiation.

32. (new) The method of claim 30 including exposing at least one surface of the substrate to the ultraviolet radiation such that said ultraviolet radiation further activates the reactions between the gas phase radicals and the process related materials at said surface for use in removal of the process related materials.

33. (new) The method of claim 30 including configuring said source arrangement for providing a first species of reactive gas phase radicals from a first source and a second species of reactive gas phase radicals from a second source and said conveying includes introducing said first species and said second species into said processing chamber for use in removing said process related materials.